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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
TAMAI, KARL I	

ART UNIT	PAPER NUMBER
2834	

NOTIFICATION DATE	DELIVERY MODE
05/13/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/584,202	DIVOUX, CLAIRE	
	Examiner	Art Unit	
	KARL I.E. TAMAI	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *3/4/2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

4a) Of the above claim(s) *See Continuation Sheet* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *63-65,67,72-74,78-80,82,87,88,92,101,125,126,128-132, and 139-141* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 63-92, 94-99, 101, and 125-141.
Continuation of Disposition of Claims: Claims withdrawn from consideration are 66,68-71,75-77,81,83-86,89-91,94-99,127, and 133-138.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The rejection of Claims 63, 64, 65, 67, 72, 73, 74, 125, and 126 under 35 U.S.C. 102(b) over Pizzi (EP 1026718) is withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 63, 64, 65, 67, 72, 73, 74, 125, and 126 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pizzi (EP 1026718), in further view of Smith (US 5677823). Pizzi teaches an electrostatic actuation device with at least one mobile electrode 3 that is flexible and free to move with respect to a substrate 2, which has an electrical contact element 10 fixed on thereto. Pizzi teaches at least two fixed electrodes 5, 6, on the substrate 2 which are located on a same side and facing the mobile electrode 3. Pizzi teaches the contacts 11, 12 providing a means for forming at least one pivot of at least one portion of the mobile electrode 3, wherein each of the at least two fixed electrodes 5, 6 are configured to progressively force the mobile part of the mobile electrode facing each of the fixed electrodes(see figures 1, 6, and 8), respectively, to contact the substrate 2 as a function of applied voltage and the mobile part 3, 10 bears on the means forming at least one pivot 11, 12 when one of the fixed

electrodes attracts a first portion of the mobile part of the mobile electrode (left side) facing the fixed electrode (see fig. 6), and another portion of the mobile part of the mobile electrode is configured to move away (right side) from the substrate 2 by mechanical return forces, thereby moving the electrical contact between a high position and a low position (fig. 6 showing a high contact position for contact 10 (on the right side), fig. 8. showing a low position for contact 10 (on the right side). Pizzi teaches the pivot are the contacts, where Pizzi teaches every aspect of the invention except the pivot being directly under the mobile part that is flexible and free to move. Smith teaches the pivot 3 is directly under the freely movable flexible part 8 to provide stable and fast switching (col. 1, line 55-63). It would have been obvious to a person of ordinary skill in the electrostatic actuator art at the time of the invention to construct the actuator of Pizzi with the pivot being directly under the mobile part that is flexible and free to move to provide stable and fast switching, as taught by Smith, and because it has been held that to rearrange parts of an invention only involves routine skill in the art. (see *In re Japikse*, 86 USPQ 70).

In regards to claim 64, Pizzi teaches the electrode 3 extends in the height direction perpendicular to the substrate (see figure 3).

In regards to claim 65, Pizzi teaches the fixed electrodes 5, 6 separated by insulation layer 7 from the mobile electrode 3.

In regards to claim 67, Pizzi shows the pivot 11, 12 to be fixed to the substrate 2.

In regards to claim 72, Pizzi teaches the mobile electrode 3 is fixed to the substrate insulation 7 on the ends (See fig. 3).

In regards to claim 73, Pizzi teaches each fixed electrode 5, 6 being located to face at least one end of the mobile electrode 3 (respectively) on one side of the means for forming the at least one pivot 11,12 (see fig. 3).

In regards to claim 74. Pizzi teaches the mobile electrode 3 having at least two mobile parts supporting the contacts 10, each mobile part being free to move at one of its ends (the contact end), and fixed to the substrate 2 at the other end (see fig. 3).

In regards to claim 125 and 126, Prizzi teaches the contact element 10 close a circuit track 13 at the low position.

4. Claims 128-130 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pizzi (EP 1026718) and Smith (US 5677823), in further view of Feng et al. (Feng)(US 6919784). Pizzi and Smith teach every aspect of the invention except the electrical contact element forms an armature, the device includes another armature being fixed with respect to the substrate to form a variable capacitor, variable capacitor has continuous operations between the high and low positions, and variable capacitor has stable positions between the high and low positions. Feng teaches the electrostatic actuator switches are variable capacitors when the contacts are controlled to not make contact (col. 4, lines 1-10). The variable capacitor having continuous operations between the high and the low positions based on a continuously increasing voltage applied to the actuator, and where the position is stable based upon the applied steady voltages to the electrodes. It would have been obvious to a person of ordinary skill in the electrostatic actuator art at the time of the invention to construct the actuator of Pizzi

and Smith with the electrical contact element forms an armature, the device includes another armature being fixed with respect to the substrate to form a variable capacitor, variable capacitor has continuous operations between the high and low positions, and variable capacitor has stable positions between the high and low positions to provide an alternate use of the actuator as a switch or variable capacitor as taught by Feng.

5. Claims 78, 79, 80, 82, 87, 88, 92, 131, and 132 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pizzi (EP 1026718) and Smith (US 5677823), in further view of Fleming (US 5867302). Pizzi and Smith teach every aspect of the invention except mobile part having at least two electrodes separated by an insulating part. Fleming teaches the movable being two electrodes 24 separated by an insulating part 14 (col. 3, line 27) to allow for individual control/addressing of the electrodes. It would have been obvious to a person of ordinary skill in the electrostatic actuator art to construct the actuator of Pizzi and Smith with the mobile part having at least two electrodes separated by an insulating part to provide individual control over the electrode pairs as taught by Fleming.

In regards to claim 79, Pizzi teaches the mobile part 3 is free to at to move perpendicular to the substrate 1.

In regards to claim 80, 92, Pizzi teaches two fixed electrodes 5, 6.

In regards to claim 82, Pizzi shows the pivot 11, 12 to be fixed to the substrate 2

In regards to claim 87, Pizzi teaches the mobile electrode 3 is fixed to the substrate insulation 7 on the ends (See fig. 3).

In regards to claim 88, Pizzi teaches the mobile electrode 3 having at least two mobile parts supporting the contacts 10, each mobile part being free to move at one of its ends (the contact end), and fixed to the substrate 2 at the other end (see fig. 3).

In regards to claims 131,132, Prizzi teaches the contact element 10 closes a circuit track 13 at the low position.

6. Claim 101 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pizzi (EP 1026718) and Smith (US 5677823), in further view of Fleming (US 5867302). Pizzi and Smith teach every aspect of the invention except the means for forming the pivot being used to hold a point of a mobile electrode at a height of between 50 nm and 20 um with respect to the substrate. Fleming teaches the spacing between the electrostatic electrodes is between 05. – 2 um (sacrificial layer 26 forming the gap, col. 4, line 43). It would have been obvious to a person of ordinary skill in the electrostatic actuator art to construct the actuator of Pizzi and Smith with the means for forming the pivot being used to hold a point of a mobile electrode at a height of between 50 nm and 20 um with respect to the substrate optimize the capacitance of the actuator, as taught by Fleming to provide an effective electrostatic actuator.

7. Claims 139-141 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pizzi (EP 1026718), Smith (US 5677823), and Fleming (US 5867302), in further view of Feng et al. (Feng)(US 6919784). Pizzi, Smith, and Fleming teach every aspect of the invention except the electrical contact element forms an armature, the device includes

another armature being fixed with respect to the substrate to form a variable capacitor, variable capacitor has continuous operations between the high and low positions, and variable capacitor has stable positions between the high and low positions. Feng teaches the electrostatic actuator switches are variable capacitors when the contacts are controlled to not make contact (col. 4, lines 1-10). The variable capacitor having continuous operations between the high and the low positions based on a continuously increasing voltage applied to the actuator, and where the position is stable based upon the applied steady voltages to the electrodes. It would have been obvious to a person of ordinary skill in the electrostatic actuator art at the time of the invention to construct the actuator of Pizzi, Smith, and Fleming with the electrical contact element forms an armature, the device includes another armature being fixed with respect to the substrate to form a variable capacitor, variable capacitor has continuous operations between the high and low positions, and variable capacitor has stable positions between the high and low positions to provide an alternate use of the actuator as a switch or variable capacitor as taught by Feng.

Response to Arguments

8. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new grounds of rejection.

Conclusion

9. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai whose telephone number is (571) 272 - 2036.

The examiner can be normally contacted on Monday through Friday from 8:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mrs. Quyen Leung, can be reached at (571) 272 - 8188. The facsimile number for the Group is (571) 273 - 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Karl I Tamai/
PRIMARY PATENT EXAMINER
May 9, 2011